UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,756	07/12/2001	Nobuyuki Hirayama	862.C2290	9593

5514 7590 04/06/2006

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
THOMPSON, JAMES A	

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/902,756	HIRAYAMA, NOBUYUKI	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2006 and 07 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07 December 2005 has been entered.

Response to Arguments

2. Applicant's arguments filed 07 December 2005 have been fully considered but they are not persuasive.

Applicant argues that Kawai (US Patent 5,539,433) and Tamura (EP 0 811 488 A2) do not teach the plurality of shift registers, each arranged to supply data for a corresponding set of print elements, as presently recited in claim 10.

Examiner responds that, while it is true that Kawai does not teach a *plurality* of shift registers, as recited in claim 10, but only a single shift register, the use of a plurality of shift registers would have been obvious to one of ordinary skill in the art at the time of the invention, as set forth in the prior art rejections below.

The present amendments to the claims have been fully considered by Examiner. Rejections based on the present amendments to the claims are set forth in detail below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 10-16 and 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Takamura (US Patent 6,493,109 B1).

Regarding claims 10, 18, 21 and 22: Takamura discloses a print head comprising a print head substrate on which is provided a print head assembly (figure 17; figure 20; and column 3, lines 23-25 and lines 30-32 of Takamura), the assembly comprising an array of printing elements (figure 17(55(11~1n, 21~2n),(D01~D0n)) of Takamura) divided into a plurality of groups of printing elements (column 8, lines 40-44 of Takamura); a driving circuit (figure 17(541) of Takamura) for selectively driving the printing elements (column 8, lines 40-44 of Takamura); a selection circuit (figure 20(101) of Takamura) common to the plurality of groups of printing elements of the array (column 19, lines 30-35 of Takamura) for selecting a printing element to be driven in each group (column 19, lines 40-47 of Takamura); and data supply means (figure 17(521,921,522,922) and column 8, lines 29-32 of Takamura) for supplying driving data to the driving circuit (column 8, lines 36-44 of Takamura), wherein the selection circuit has common lines (figure 20 and column 19,

lines 30-35 of Takamura) coupled to the plurality of groups of printing elements of the array (column 19, lines 30-35 of Takamura) for selecting a printing element to be driven in each group (column 19, lines 36-40 of Takamura), and wherein the data supply means comprises a plurality of shift registers (figure 17 (521,522) of Takamura), each arranged to supply data for a corresponding set of the printing elements (column 10, lines 4-6 of Takamura), the shift registers being spaced apart in the direction of the array with each shift register being arranged adjacent to the corresponding set of printing elements (as can clearly be seen in figure 17 of Takamura).

Further regarding claim 10: The print head substrate of claim 10 is fully embodied within the print head of claim 18.

Further regarding claim 21: Takamura further discloses an ink tank for storing ink to be supplied to the print head (column 8, lines 32-37 of Takamura).

Further regarding claim 22: Takamura further discloses driving data generation means (figure 17(SDI) of Takamura) for generating a data signal for each path of the shift registers (column 8, lines 45-48 and column 9, lines 41-45 of Takamura).

Regarding claim 11: Takamura discloses that a plurality of the print head assemblies are provided on the substrate (figure 17; figure 20(YMCB); and column 19, lines 21-26 and lines 40-42 of Takamura). For printing the four primary ink colors (figure 20(YMCB) and column 19, lines 21-26 and lines 40-42 of Takamura), at least two sets of the print head assemblies shown in figure 17 of Takamura are required.

Regarding claim 12: Takamura discloses that the plurality of shift registers receive clock and data signals (figure 17 (CLK,SDI) and column 8, lines 18-23 of Takamura), and the data

supply means further comprises a plurality of latches (figure 18 (931,941,951) and column 17, lines 34-38 of Takamura) for latching output signals from the shift registers (column 17, lines 41-45 of Takamura), and AND circuits (figure 18(96(one in 921, one in 922)) of Takamura) for deriving a logical product of outputs from the latches and a driving signal (column 17, lines 47-52 of Takamura).

Regarding claim 13: Takamura discloses that there are two shift registers (figure 17(521,522) of Takamura) arranged at respective ends of the printing element array (as can clearly be seen in figure 17 of Takamura).

Regarding claims 14 and 15: Takamura discloses that the array of printing elements extends alongside an ink supply port (column 8, lines 32-41 of Takamura). The n output pins (figure 17(D01~D0n) of Takamura) drive a printhead with n output devices, which include the ink supply port(s) (column 8, lines 32-41 of Takamura). Thus, the array of printing elements extends alongside an ink supply port.

Regarding claim 16: Takamura discloses that said selection circuit (figure 20(101) of Takamura) is arranged at one end of the printing element array (as can clearly be seen in figure 20 of Takamura).

Regarding claim 19: Takamura discloses that the print head is an ink jet head for printing data by discharging ink (column 8, lines 32-37 of Takamura).

Regarding claim 20: Takamura discloses that the print head comprises electrothermal transducing means for generating thermal energy to cause ink discharge (column 8, lines 32-37 of Takamura).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takamura (US Patent 6,493,109 B1) in view of Kawai (US Patent 5,539,433).

Regarding claim 17: Takamura does not disclose expressly that said substrate is a rectangle and the printing elements array extends along the length of the rectangle.

Kawai discloses a print head substrate that is a rectangle (figure 27(250) and column 24, lines 50-58 of Kawai) and a printing elements array that extends along the length of the rectangle (figure 27(251) and column 24, lines 52-53 of Kawai). As can clearly be seen in figure 27 of Kawai, the substrate is rectangular and the printing elements array (figure 27(251) of Kawai) extends along the length of said rectangle.

Takamura and Kawai are combinable because they are from the same field of endeavor, namely printer head electronics and the digital control of printer heads and print head data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to specifically use a rectangular substrate and arrange the printing elements array along the length of said rectangle. The suggestion for doing so would have been that the individual printing elements are arranged in

a line (figure 17(D01~D0n) and figure 20 of Takamura). Thus, the printing elements array should extend along the length of the substrate. With a rectangular substrate, the circuitry can be easily organized and the points at which the actual ink is released can be arranged linearly along one edge so as to allow for good ejection of the ink at the proper points. Therefore, it would have been obvious to combine Kawai with Takamura to obtain the invention as specified in claim 17.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Division 2625

30 March 2006

DAVID MOORE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600